

CONTRIBUTIONS ON PALAEOZOIC FLORAS. 1.

ON THE IDENTIFICATION OF GLOSSOPTERIS CORDATA DANA.

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(Plate i.)

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Synopsis.

A neotype for *Glossopteris cordata* Dana has been selected. *Glossopteris feistmantelii*, nom. nov., is proposed to describe specimens of *G. cordata* Feistmantel non Dana described from India and South Africa.

GLOSSOPTERIS CORDATA Dana.

1849. *Glossopteris* ? *cordata* Dana in Wilkes' U.S. Exploring Expedition, vol. 10, p. 718, Pl. 13, fig. 5.
 1880. *Glossopteris cordata* in Feistmantel, *J. roy. Soc. N.S.W.*, 14: 115, 107.
 1883. *Glossopteris cordata* in Tenison-Woods, *Proc. Linn. Soc. N.S.W.*, 8 (1): 124 and footnote.
 1890. *Glossopteris cordata* in Feistmantel, *Mem. geol. Surv. N.S.W.*, Pal. 3: 124.
 1904. *Glossopteris nephroidicus* Etheridge, *Rec. geol. Surv. N.S.W.*, 7 (4): 315-316, Pl. lviii, lix, fig. 1, 2.

Not Recognized as belonging to this Species.

1882. *Glossopteris cordata* Feistmantel, *Flora. gondw. Syst.*, 4 (1): 35, Pl. XXA, fig. 1.
 1932. *Glossopteris cordata* in du Toit, *Ann. Sth. Afr. Mus.*, 28 (4): 378-381, text-fig. 1A-D.

The type specimen of Dana, originally housed in the U.S. National Museum, Washington, has been lost (du Toit, 1932, and confirmed by Mamay, pers. comm.). The locality was given as "District of Illawarra".

The type specimens of *Glossopteris nephroidicus* Etheridge are housed in the Mines Department Museum, Sydney, N.S.W., and bear the numbers 2878 and 2883 (with its counterpart 2884). These specimens came from the foot of Mount Kembla. They have been relabelled *Glossopteris cordata* Dana, possibly by Dun.

It is impossible to determine the exact position of either locality, but specimens attributable to this species are common in and below the Unanderra Seam near Mount Kembla and Mount Keira. It is suggested that Dana's specimen was an imperfect specimen of the same species as Etheridge described as *Glossopteris nephroidicus*. It is proposed that one of these specimens should now become the neotype for the species, viz., No. 2883. This specimen was illustrated by Etheridge (1904) as Plate lviii. Plate i shows the counterpart, No. 2884, of the leaf selected. The venation is clear on this photograph, but was not clear in Etheridge's photographs. This venation differs from that of his Plate lix, fig. 2. The specimen he illustrated as Plate lix, fig. 1, bears the number 2878.

Amended diagnosis.

Broadly elliptical leaf, obtuse to broadly rounded apex, margin entire, possibly slightly thickened and recurved, base cordate, auriculate lobes overlap petiole when

the leaf is fully expanded. Midrib stout at base, virtually indistinguishable from secondary venation at apex, longitudinally ribbed, fibres of midrib anastomosing. Secondary venation dichotomous, anastomosing with meshes approximately four times as long as broad. Secondary venation curves away from the midrib over a distance of 1 or 2 meshes, then runs straight to margin. Angle venation makes with margin 90° towards apex, decreasing to 80° at base of auriculate lobes, between base of lobes and petiole angle decreases rapidly to 20° and veins become arcuate. Petiole broad with decurrent blade, particularly in smaller specimens. Cuticle could not be prepared.

Description.

Counterpart, Pl. 1. ($\times \frac{3}{4}$.) No. 2884, Mines Dept. Mus., Syd., N.S.W. Length along midrib 98 mm. Length including auricles 112 mm. Maximum breadth 80 mm. half-way along midrib. Width of midrib at base of blade 3.5 mm. Density of secondary venation 1 cm. from midrib, and away from the apex: 10 per cm. Density of secondary venation at margin, but not along lobes: 20 per cm. Length of areoles at 1 cm. from midrib 4–5 mm. Length of areoles at 1 areole removed from margin 1.5–2 mm.

The venation of this leaf is identical with that described from the specimen of Dana where they were “nearly 4 to a line in breadth”. His other characters (Dana, 1849, p. 718) also accurately describe the specimen illustrated below. His figure appears to be more diagrammatic than accurate as the measurement given above does not coincide with that measured from the figure (Dana, 1849, Pl. 13, fig. 5). He thought that “the frond was probably quite broad for its length”. His locality was given as “District of Illawarra”.

Arber (1905) included *Glossopteris cordata* Dana in *Glossopteris ampla* Dana. He described Dana’s specimen as “simply a basal portion of a frond of (*G. ampla*)”. This is not admissible as the base of *Glossopteris ampla* is tapering (see Dana, 1849, Pl. xiii, fig. 1a).

Etheridge (1904) described a number of leaves from the foot of Mount Kembla. Illawarra district, as *Glossopteris nephroëidicus*. He justified its separation from *Glossopteris cordata* Dana in these words: “In Dana’s figure the basal margin does appear to be incurved on each side (of) the mid-rib, but a little consideration will convince the observer that this is simply a fractured edge”, even though Dana (1849, p. 718) had considered and discounted this.

In 1882 Feistmantel (p. 34, Pl. XXA, fig. 1) described *Glossopteris cordata*, sp. nov. I consider that it is quite clear from his description that he had forgotten that the trivial epithet was occupied. I propose that this species be re-named *Glossopteris feistmantelii*, nom. nov., in his honour. His description as given should stand as the description of *Glossopteris feistmantelii*.

Arber (1905, p. 49) listed ? *G. cordata* Feistmantel (*non* Dana) in the synonymy of *Glossopteris browniana* Brongniart. Arber (1905, pp. 52–53) stated: “In any case Feistmantel’s specific name is inadmissible, since it had previously been used by Dana.”

du Toit (1932) discussed the inclusion of some specimens from near the Inhluzani Mountain, Natal, in *Glossopteris cordata* Feistmantel *non* Dana. He was inclined to regard *Glossopteris nephroëidicus* Etheridge and *Glossopteris cordata* Feistmantel “as most probably stages in the development of the same species or at most as mere varieties thereof”. On page 38, du Toit thought that in the Natal leaves “the auriculation is essentially a juvenile character and that it becomes less prominent with age, being accompanied by corresponding changes in the outline of the frond and also in the course of the venation”. This is clearly illustrated in his Text-fig 1, A–D (p. 379), and Plate XXA, fig. 1, of Feistmantel (1882).

This differs markedly from the development of the auriculation in *Glossopteris cordata* Dana (syn. *nephroëidicus* Etheridge) where it becomes stronger with age. The leaf shape in *Glossopteris cordata* becomes increasingly broadly elliptical whereas in *Glossopteris feistmantelii* it becomes oblong.

GLOSSOPTERIS FEISTMANTELI, nom. nov.

1882. *Glossopteris cordata* Feistmantel, *Palaeont. indica. Flora gondw. Syst.*, 4 (1): 35, Pl. XXA, fig. 1.

1932. *Glossopteris cordata* in du Toit, *Ann. Sth. Afr. Mus.*, 28 (4): 378-381, text-fig. 1, A-D.

Type specimen. Geological Survey of India Museum, Calcutta.

Diagnosis. As given by Feistmantel (1882, p. 35).

Distribution. Raniganj group of South Rewah (Feistmantel, 1882), Lower Beaufort beds of Natal (du Toit, 1932).

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References.

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EXPLANATION OF PLATE I.

Glossopteris cordata Dana; the entire leaf on the upper right is the counterpart of the neotype. × 3.